

Application No.: 10/588,307
Art Unit: 2885

Amendment under 37 CFR §1.111
Attorney Docket No.: 062662

AMENDMENTS TO THE DRAWINGS

The attached drawing sheet includes changes to Figure 5. This sheet, which includes only Figure 5, replaces the original sheet including Figure 5.

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REMARKS

Please reconsider the application in view of the above amendments and the following remarks.

Information Disclosure Statement

Filed concurrently with this amendment is an Office Action issued for corresponding Chinese Patent Application No. 2005800032891, dated September 5, 2008.

Drawings

Applicant herein amends Figure 5 for missing lines that illustrate L4 and L5.

Status of Claims

Claims 1-10 are pending in the present application. Claims 1 and 4 are herein amended. Claims 2 and 5 are herein cancelled. No new matter has been entered.

As to the Merits:

Claims 1 and 7 were rejected under 35 U.S.C. 102(e) as being anticipated by **Kittelmann et al.** (US 6,899,451).

Claims 4 and 8 were rejected under 35 U.S.C. 102(b) as being anticipated by **Reis** (US 6,420,668).

Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over **Kittelmann et al.** (US 6,899,451) in view of **Mi et al.** (US 6,943,930).

Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over **Reiss** (US 6,420,668) in view of **Mi et al.** (US 6,943,930).

Claims 2 and 3 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Kittelmann et al.** (US 6,899,451).

Claims 5 and 6 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Reiss** (US 6,420,668).

Each of these rejections is respectfully traversed.

Applicant herein amends claim 1 with all of the limitations of dependent claim 2 and cancels dependent claim 2. Also, Applicant herein amends claim 4 with all of the limitations of dependent claim 5 and cancels dependent claim 5.

Independent claim 1

Claim 1, as amended, calls for ... *wherein the distance L1 between the first focal point and a bottom point of the curved mirror is 1 to 40 mm; the distance L2 between the first focal point and the second focal point is 50 to 200 mm; the distance L3 between a light source center of the cylindrical light source and the bottom point of the curved mirror is 20 to 130 mm; and L3 is larger than L1, and the sum of L1 and L2 is larger than L3.*

For example, as noted on page 14, Example 1, of the present specification, “[...] An elliptic curved mirror, in which **a distance between the first focal point and the bottom point of the curved mirror [L1]** was 20 mm, **a distance between the first and second focal points [L2]** was 150 mm, and **a distance between the light source center and the bottom point of the curved mirror [L3]** was 60 mm, was set. The curved mirror was 117 mm in width. Measurement of illuminance on the PET sheet, with illuminance meter UVR-T1 (manufactured by TOPCON CORPORATION; light receiver unit UD-T36; measurement wavelength 300 to 390 nm; peak-sensitive wavelength 350 nm), showed that a length of the irradiated region (in a feed direction of sheet) where a variation in illuminance falls within ± 1 mW/cm² was **3,900 mm.**”

In other words, by employing the dimensions such that a distance between the first focal point and the bottom point of the curved mirror (L1), a distance between the first and second

focal points (L2) and a distance between the light source center and the bottom point of the curved mirror (L3) are within the range recited in claim 1, a region -- where the illuminance distribution is uniform -- can be obtained over a wide range, for example, 3,900 mm as noted in Example 1 above.

Since uniform illuminance distribution, in the claimed invention, can be obtained over a wide range, illumination devices can be arranged with gaps therebetween. As a result a number of light sources to be used can be reduced. Consequently, the manufacturing cost of the equipment can be significantly lowered because the light irradiation apparatus can be miniaturized. *See pages 5-6 and 16-17 of the present specification.*

On page 4 of the Office Action, the Examiner acknowledges that the aforesaid limitations of now amended claim 1 are not disclosed in Kittelmann. Nonetheless, the Examiner contends that “[i]n the absence of any unobvious or unexpected results the relationship between the light source and reflector is considered a design choice depending on the operating conditions for the lighting device.” Applicant respectfully submits that this is a misinterpretation of the reference.

In column 3, lines 19-33, Kittelmann sets forth the following:

“FIG. 2 [illustrates] an optical system according to the invention for a Fresnel lens light that is arranged to produce a floodlight. This structure corresponds to the structure of the optical system shown in FIG. 1. The aperture angle of the light beam propagated from the Fresnel lens 3 can be

arbitrarily increased by **changing the distance b between the light source 2 and the vertex V of the reflector 1 and the distance a between the Fresnel lens 3 and the front edge E of the ellipsoidal reflector 1. So that the uniformity of the illumination intensity is maintained, [...]."**
(emphasis added)

In other words, Kittelmann, in Fig. 2, teaches maintaining the uniformity of the illumination intensity by changing the distance **b** (L3 in the claimed invention) between the light source center and the bottom point of the curved mirror and the distance **a**, which is the distance between the Fresnel lens 3 and the front edge E of the ellipsoidal reflector 1. Applicant respectfully submits that no such **distance a** is recited in the claimed invention.

In contrast, in the claimed invention, the uniform illuminance distribution over a wide range is obtained by setting dimensions L1, L2 and L3, *wherein the distance L1 between the first focal point and a bottom point of the curved mirror is 1 to 40 mm; the distance L2 between the first focal point and the second focal point is 50 to 200 mm; the distance L3 between a light source center of the cylindrical light source and the bottom point of the curved mirror is 20 to 130 mm; and L3 is larger than L1, and the sum of L1 and L2 is larger than L3.* Kittelmann being **completely devoid** any such dimensions or teaching of any such dimensions.

Furthermore, the reference Kittelmann proposes to produce the uniformity of the illumination intensity by using a light source, a refractor and a Fresnel lens. **In contrast**, the illumination devise of the claimed invention is composed of a light source and a refractor, without a Fresnel lens. Therefore, in the claimed invention, it is possible to produce the

uniformity of the illumination intensity by adjusting the position of the light source and the position of focal points, and this matter is the advantage of the claimed invention over Kittelmann. Accordingly, the claimed invention is not only novel, it is also unobvious over Kittelmann.

Therefore, Applicant submits that Kittelmann neither anticipates nor renders obvious claims 1, 3, 7 and 9 because it fails to teach or suggest *wherein the distance L1 between the first focal point and a bottom point of the curved mirror is 1 to 40 mm; the distance L2 between the first focal point and the second focal point is 50 to 200 mm; the distance L3 between a light source center of the cylindrical light source and the bottom point of the curved mirror is 20 to 130 mm; and L3 is larger than L1, and the sum of L1 and L2 is larger than L3*. Accordingly, Applicant respectfully requests that the rejection be withdrawn.

Independent claim 4

Claim 4, as amended, calls for ... *wherein the distance L4 between the focal point and the bottom point of the curved mirror is 40 to 200 mm; the distance L5 between a light source center of the cylindrical light source and the bottom point of the curved mirror is 5 to 50 mm; and L4 is larger than L5*.

For example, as noted on pages 14-15, Example 2, of the present specification, “[a] curved mirror of a parabola shape, in which **a distance between the bottom point of the curved mirror and the focal point [L4]** was 100 mm, **a distance between the light source center and the bottom point of the curved mirror [L5]** was 20 mm, and the width of the curved mirror was 200 mm was set. In all other respects, the experimental condition was rendered analogous to that of Example 1. Measurement of illuminance on the PET sheet showed that a length of the irradiated region (in a feed direction of sheet) where the variation in illuminance falls within ± 1 mW/cm² was **2,300 mm**.

In other words, by employing the dimensions such that a distance between the bottom point of the curved mirror and the focal point [L4], and a distance between the light source center and the bottom point of the curved mirror [L5] are within the range recited in claim 4, a region -- where the illuminance distribution is uniform -- can be obtained over a wide range such as 2,300 mm as noted in Example 2 above.

On page 4 of the Office Action, the Examiner acknowledges that the aforesaid limitations of now amended claim 4 are not disclosed in Reiss. Nonetheless, the Examiner contends that “[i]n the absence of any unobvious or unexpected results the relationship between the light source and reflector is considered a design choice depending on the operating conditions for the lighting device.” Applicant respectfully submits that this is a misinterpretation of Reiss.

In column 5, lines 45-56, Reiss sets forth the following:

“[t]he orientation of this corrected zone 22a is preferably such that the mean direction of the reflected radiation passes substantially below the bulb 11 of the lamp. For example, in the case where **the focal length** of the vertical generatrix of the reflector is **22 mm**, **a zone 22a can be provided having a height which is of the order of 5 mm**, with its orientation being such that the radiation issuing from the light source is reflected with a downward inclination of between about 0° and about 11°. This is particularly appropriate where it is desired **to increase the quantity of light close to the vehicle**, especially in the case where the headlight is a headlight of a heavy goods vehicle.”

First, Applicant respectfully submits that Reiss, as in the example above, explicitly teaches a focal point of the curved surface as 22 mm, which does not fall within the recited range (L4 = 40 – 200 mm) in claim 4.

Second, Reiss is not recognized as solving the problem solved by the claimed invention, i.e., obtaining the uniform illuminance distribution over a wide range by setting dimensions L4, and L5. Instead, Reiss is concerned with increasing the quantity of light close to the vehicle by correcting the orientation of zone 22a as noted in the blocked paragraph above.

In contrast, in the claimed invention, the uniform illuminance distribution over a wide range is obtained by setting dimensions L4 and L5, *wherein the distance L4 between the focal point and the bottom point of the curved mirror is 40 to 200 mm; the distance L5 between a light*

source center of the cylindrical light source and the bottom point of the curved mirror is 5 to 50 mm; and L4 is larger than L5.

Therefore, Applicant submit that Reiss neither anticipates nor is germane to rejecting claims 4, 6, 8 and 10 under obviousness rejection because it does not teach or suggest *wherein the distance L4 between the focal point and the bottom point of the curved mirror is 40 to 200 mm; the distance L5 between a light source center of the cylindrical light source and the bottom point of the curved mirror is 5 to 50 mm; and L4 is larger than L5.* Accordingly, Applicant respectfully requests that the rejection be withdrawn.

The Claims have been shown to be allowable over the prior art. Applicant believes that this paper is responsive to each and every ground of rejection cited in the Office Action dated September 30, 2008, and respectfully request favorable action in this application. The Examiner is invited to telephone the undersigned, applicant's attorney of record, to facilitate advancement of the present application.

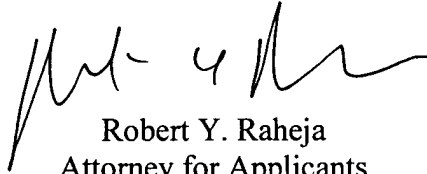
Application No.: 10/588,307
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If this paper is not timely filed, Applicant respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, appearing to read 'R. Y. Raheja', is written over the printed name.

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